Sediment contamination of toxic substances poses a serious threat to the water quality of the Great Lakes and its ecological habitat. There are a total of 43 AOCs along the Great Lakes both in the United States and Canada. There is one AOC identified and located along Lake Michigan at Waukegan Harbor in Lake County, Illinois. Remediation is the necessary next step to ensure that toxic substances and are removed and the sediment is healthily restored for beneficial use.

The United States and Canada recognized Waukegan Harbor as an AOC within the Great Lakes region in 1981 after polychlorinated biphenyls (PCBs) were found in the harbor sediment in 1975. After further investigation of the area it was discovered that the PCBs were likely the result of the fluid used by the Outboard Marine Corporation (OMC) during its operation.

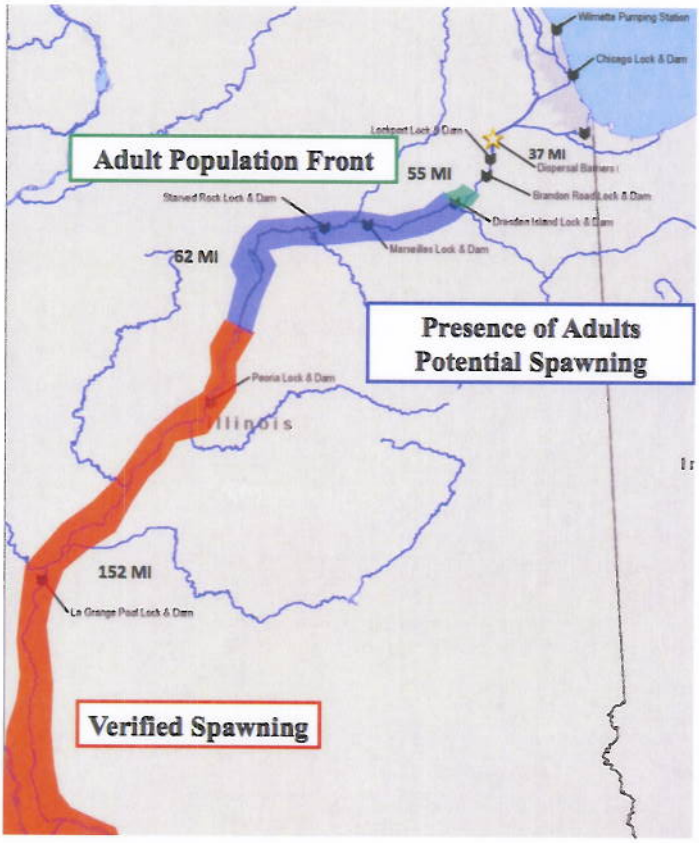
Remediation plans for Waukegan Harbor began in 1990. According to the EPA, approximately one million pounds of sediment with PCB was removed and placed in a confined disposal facility on site. Only sediment with 50 ppm PCB or greater was removed and residual contamination remained after the dredging. Over 30 years have passed since PCBs were discovered at Waukegan Harbor and the site is yet to be fully restored and delisted as an AOC in the Great Lakes. Through the coordination of the U.S. EPA, Illinois EPA, the Army Corps of Engineers, and the Waukegan Harbor Citizens Advisory Group (CAG) the final stages of the remediation plan are in place through the Superfund process. EPA is ready to move forward in the last phases of the cleanup of the harbor and store the waste close to the site in a fully contained and protected area.

- **Action Item: Work with local, state, and federal stakeholders to ensure the timely cleanup of Waukegan Harbor and the delisting of Waukegan Harbor as an Area of Concern on the Great Lakes**

INVASIVE SPECIES

Grade for Lake Michigan: C

Explanation: One of the greatest threats of invasive species to the Great Lakes is Asian carp. To date, Asian carp have not been found in Lake Michigan; however, populations of adult carp with potential for spawning are approximately 62 miles away from the Lake. The threat of invasive species has a long history in the Great Lakes. Sea lamprey and Zebra and Quagga mussels are examples of the havoc aquatic invasive species can have on an entire ecosystem. According to the Great Lakes Commission, sea lamprey caused the sharp decline in the harvest for lake trout from 5.5 million pounds to 402 pounds in Lake Michigan between 1946 and 1953. History shows us that we need to be more aggressive in protecting our Great Lakes fisheries from invasive species.



The Great Lakes region supports a $7 billion fishing industry and hundreds of thousands of jobs. Keeping invasive species, including the destructive Asian carp, out of the Great Lakes is imperative to the health of the lakes and the jobs they support. According to the U.S. Fish and Wildlife Service (USFWS), more than 180 aquatic invasive species (AIS) are established in the Great Lakes. AIS have severe impacts on native aquatic ecosystems, as many degrade the livable environment of native species by consuming the native food supply. According to available information from the U.S. Geological Survey's (USGS) Nonindigenous Aquatic Species Database, 17 new aquatic species, including plants, viruses, crustaceans and algae have been collected and established in Lake Michigan since 2000.

Two of the greatest invasive species threat to the Great Lakes are several species of Asian carp - the silver and bighead carp - which are both swimming northward. Asian carp pose a serious threat to native populations of species because of their tremendous capability to consume plankton that other small species rely on as a major source of food.

According to the Great Lakes Fishery Commission, Asian carp can grow to be as much as 100 pounds and up to four feet long. Over the last two years, through the work of the Asian Carp Regional Coordinating Committee (ACRCC) and the Great Lakes Restoration Initiative (GLRI), we have seen great strides to address the threat of Asian carp and invasive species; however, we need to continue to evaluate our progress in mitigating the spread of invasive species.

To date, Asian carp have not been found in Lake Michigan; however, strong regional cooperation is necessary to halt the proliferation of Asian carp into the Great Lakes. Known populations of carp are growing below the Army Corp electric dispersal barriers, as demonstrated in the previous Figure. Three isolated discoveries of a single carp have occurred above the dispersal barriers, which are located 37 miles away from the Lake Michigan; however, it is unclear how these carp came to be above the barrier. The ACRCC developed the Asian Carp Control Strategy as a framework to halt the spread of Asian carp in the

Great Lakes, including the surveillance of environmental DNA (eDNA) to detect the indicators of DNA specific to Asian carp in the CAWS. eDNA sampling is a relatively new technology, beginning in 2009. While it may be a potential indicator for the presence of Asian carp, positive eDNA samples cannot conclude that live Asian carp populations are present or even how Asian carp DNA came to be at the location.

As it is a relatively new methodology, further development of eDNA will provide greater context for eDNA results. The Figure below shows the annual results to date of positive eDNA sample for Asian carp along the CAWS. Already, as of July 2011, the Army Corps of Engineers has confirmed 13 eDNA samples tested positive for Asian carp. Without fully understanding what eDNA clearly exposes, it is clear that the dispersal barriers are withholding large spawning populations of Asian carp from traveling up the CAWS towards the Great Lakes.

	Total eDNA Samples Collected	**Samples Positive for Asian Carp Above the Barriers**
2010	1482	17
2011 *To date*	898	13

- **Action Item: Increase voltage of electric barriers**

Keeping out invasive species, especially Asian carp, is imperative. Asian carp have not been found in the Great Lakes, but verified spawning populations are present about 150 miles away and eDNA results positive for Asian carp have been found above the barrier. Just last month three consecutive eDNA samples for carp were found in Lake Calumet, above the barrier, which was designed to keep the carp out.

The Army Corps of Engineers should take every effort to up the voltage at the three electric dispersal barriers as a further deterrent for carp.

OVERALL HEALTH OF LAKE MICHIGAN

- **Grade: C**